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MONTANA GIS NEWS

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Montana GIS Users Group

Winter 1993

MONTANA GAP ANALYSIS/BIODIVERSITY PROJECT

Increasing losses of the earth's ecosystems, biological communities, and species during the past few decades have focused the attention of scientists and conservationists on the need to preserve these irreplaceable biological resources. Planning for the conservation of biodiversity, however, first requires identification of the components and a determination of how well they are protected under existing land management regimes. To this end, the U.S. Fish and Wildlife Service has initiated a program called Gap Analysis which uses geographic information systems to analyze the spatial distributions of terrestrial vegetation and animal species, in conjunction with land ownership and management data, and to identify patterns of species richness and gaps in their level of protection. Such a comprehensive and systematic approach is intended to help agencies effectively manage wildlife species before populations decline to the point that costly and heroic measures are required to insure their survival. In Montana, this project will compile a standardized set of statewide GIS databases for use and further development by state and federal agencies, as well as private organizations. To date, the project has received financial support from the U.S. Fish and Wildlife Service, the U.S. Forest Service, the National Fish and Wildlife Foundation, and IBM Corporation.

Vegetation Mapping

A map of existing vegetation for Montana is being developed from a digital classification of Landsat-Thematic Mapping(TM) data. The general classification process involves two steps: 1) discerning the pattern of spectral polygons and delimiting their boundaries, and 2) labeling the polygons. The first step is accomplished with a classification algorithm developed during the last year that mimics the false-color composite of TM bands 4, 5, and 3 (RGB). For the second step, ground-truth data from existing vegetation maps, plot data, and aerial photographs are being analyzed with ancillary biophysical data (slope, elevation, aspect, and climate) to determine statistical relationships between polygon attributes and existing cover types. These relationships then will be used as knowledge for an expert system to predict the cover type, and associated variables (e.g., age, structure, and canopy cover) for the remaining, unlabeled spectral polygons within a given TM scene.

The efficacy of this process is still being evaluated on two pilot study areas: the Seeley-Swan Valley in western Montana, and a portion of the Charles M. Russell (CMR) National Wildlife Refuge in the east-central part of the state. These areas were selected because a considerable amount of vegetation data were available for each, and because each area contains vegetation that is generally representative of much larger surrounding areas. Results from the Seeley-Swan Valley indicate that relatively pure forest types, such as ponderosa pine, Douglas fir, western larch, and lodgepole pine can be readily distinguished, but as stands become mixed, species composition becomes more difficult to identify. To further complicate matters, class definitions for published vegetation hierarchies (e.g., UNESCO, SAF, USGS) often do not match the attributes of our spectral classification. Consequently, we are working closely with a group of botanists and plant ecologists across the state to develop a revised classification of existing vegetation and to advise with the mapping process.

As of March 1993, 24 of the 32 TM scenes covering the state have been acquired, and four have been classified to delimit spectral polygons.

Animal Distributions

An advisory group consisting of wildlife ecologists from agencies and universities has been formed to guide efforts to model the distributions of the states 410 native terrestrial vertebrates. The MT Natural Heritage Program is providing the Vertebrate Characterization Abstracts for these species. Biologists from the US Forest Service and the MT Department of Fish, Wildlife, and Parks have provided input for us to model distributions of upland game birds, big game, and furbearers in the Seeley-Swan pilot study area. These predicted distributions soon will be compared with existing maps of known distributions to evaluate the modeling techniques.

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Land Ownership/Management

Negotiations are in progress with the US Bureau of Land Management to share the costs of scanning, editing, and labeling their 1:100,000 Surface and Subsurface Management Series maps for Montana. Because many cooperating agencies were not satisfied with the four general classes of protection used by the Gap Analysis Program, we are working with the Montana Interagency Natural Areas Protection Committee to develop a more detailed classification of management and protection categories for all lands in the state. These classes will not replace the four levels used for Gap Analysis, but will be added as another attribute in the database.

Other Layers

All Defense Mapping Agency (1:250,000) digital elevation models for the state have been acquired, and we are acquiring from BLM, the USGS Digital Line Graphs (1:100,000) for hydrography. This layer will be critical for the accurate mapping of riparian vegetation and associated animal species. Average annual precipitation and temperature variables are being produced from long-term weather data and a computer model. The weather data are complete for the Seeley-Swan Valley, but the computer models need to be revised for the relatively flatter, eastern portion of the state.

by Roly Redmond

For more information call, 406-243-4906; University of Montana, Coop. Wildlife Unit, Missoula, MT. 59812.

MONTANA GIS USERS GROUP BOARD OF DIRECTORS HAS FIRST MEETING

The Montana GIS Users Group Board of Directors, recently elected at the annual Montana GIS conference, met for the first time on January 28, 1993 in Helena. The following actions were taken at the meeting:

Board Membership

Board members are: Michael Blongewicz, ESRI; Fred Gifford, Montana State Library - GIS; Stu Kirkpatrick, Butte Silver-Bow Planning Office; Ken Wall, University of Montana; Don Cromer, Terra West Technology.

The board decided to keep its membership at five for the present. The annual conference chair was suggested as a board member in the future. As no conference chair has been identified, no action was taken. The board decided to operate the user group primarily with an active committee structure. Volunteers will be recruited to assist the board in staffing the committees and conducting the User Group activities.

Appointment of Officers: President, Fred Gifford; Vice President, Stu Kirkpatrick; Secretary, Ken Wall; Treasurer, Don Cromer.

Mailing List

Due to state law, NRIS can no longer maintain the Montana GIS User Group mailing list. Stu and Fred will consolidate changes in the user group mailing list and update the list based on the 1992 conference. Ken will then maintain the mailing list on a private computer.

Distribution of the list was discussed. The decision was made that anyone attending the annual conference will receive a copy of conference attendees. They may also request a paper copy after final attendance has been corrected. Distribution of the mailing list in digital or electronic form will only be allowed for non-profit purposes. A notification in the quarterly newsletter and during conference registration will allow everyone on the mailing list the opportunity to request that their name be removed from the list or that their name be withheld from distribution to others.

User Group Bank Account

Final accounts had not been settled from the 1992 conference in Butte at the time the Board of Directors met, but Stu Kirkpatrick, the conference chair, reported that the conference added approximately $2,000 to the user group account, bringing the current balance to approximately $6,000. A conference fiscal statement and user group financial statement will be published when all conference bills are final. The User Group account will be transferred to a bank in Helena and remain there permanently. Temporary accounts may be opened in conference host communities for purposes of conducting the conference.

Newsletter

The target date for the next newsletter is February, 1993. Fred Gifford will chair the newsletter committee. He will search for a newsletter editor and several contributing editors. Anyone interested in contributing to the newsletter can contact Fred at 444-5357. The board authorized Fred to pursue a plan for limited ads in the newsletter to partially offset costs of printing and distribution. The initial idea discussed was business card style ads, all on the same page of the newsletter with the same level of presentation. A $50 target was suggested, but the final cost will be determined after consultation with those interested in purchasing an ad.

Conference

Since no organization or community has volunteered to host the 1993 Montana GIS User Group conference, the board decided to move the conference to spring, 1994 to allow more time to arrange a host and to avoid winter travel. Several requests were received in evaluation comments from the 1992 conference to change the conference dates which contributed to this decision. The next conference will be in the spring of 1994 in Kalispell. The board discussed the possibility of combining the conference with the Northwest Arc/Info User Group conference, but decided against this proposal.

MONTANA GIS NEWS AVAILABLE IN ELECTRONIC FORM

The 1989 Montana Legislature passed House Bill 270 which authorized a pilot project to provide state government information to the citizens of Montana through an electronic bulletin board system. The project is being implemented by the Montana Department of Administration in cooperation with the Montana State Library. This issue of the *Montana GIS News* will be posted on the bulletin board. The Natural Resource Information System (NRIS) is posting other information including the monthly drought report generated at NRIS and the Department of Natural Resources and Conservation for the Montana Drought Advisory Committee.

To use the system, you need a personal computer, communications software and a telephone modem. In Helena, the bulletin board number is 444-5648 and 1-800-962-1724 for those outside Helena. Modem settings are: 2400,E,7,1.

Other state agency information currently is available on the Bulletin Board and is updated as new information becomes available.

SMAC NEWS

The traditional process of submitting map requests each year from the State Mapping Advisory Committee (SMAC) to the U.S. Geological Survey's (USGS) National Mapping Division (NMD) through the A-16 process has changed. The USGS is no longer conducting an annual solicitation of requests. Instead, the NMD is working with the Federal Geographic Data Committee (FGDC) to develop a Cartographic Requirements Management System (CRMS) to manage and analyze state and federal map requirements. The system will be used to help determine the highest priorities for both map and digital cartographic data production.

State and federal agencies can submit mapping, digital cartographic, and image data requirements at any time using the A-16 Request Forms and appropriate map and data indexes. The forms and indexes can be obtained from the USGS, National Mapping Division, Box 25046, MS 507, Denver Federal Center, Denver, CO 80225 (303- 236-5835).

JOBS FOR GRADS

JobSearch, a **GeoSearch** program, will provide key contacts in six U.S. regions and Canada including name, title, company/public organization, address, telephone, and mailing labels to new college graduates in 1993. "How to Land the Job" information will also be included. The service is limited to persons earning an Associates, Bachelors, Masters, or Doctorate degree during the current academic year or persons with less than one year of industry experience using their highest degree. PO Box 62129 Colorado Springs, CO 80962. 719-260-7087.

LIBRARY USERS ABLE TO ACCESS GIS DATABASES

Through a partnership with Environmental Systems Research Institute, Inc. (ESRI), the Montana Natural Resource Information System (NRIS) at the Montana State Library is sponsoring an innovative project for libraries to increase public access to geographic data. The project uses ESRI's ArcView™ software to provide graphic access to geographic information system (GIS) databases.

GIS computer technologies are costly and require considerable skill to operate. These factors have created barriers to widespread application. With the advent of ArcView™, which operates on a personal computer, the learning curve and costs have significantly decreased. ArcView™ functions like a card catalog of maps. Users can, with minimal training, access extensive databases and create and print out the maps they need.

Any library in Montana is eligible to participate in the project. NRIS can provide the following to Montana libraries from ESRI: One copy of ArcView™ software and manuals (ArcView™ for Windows or for Macintosh when available); one set of ArcUSA CDs (1:25 million and 1:2 million scales); One set of ArcWorld CDs (1:25 million and 1:3 million scales); one set of ArcCensus CDs (when available); one set of ArcScene USA Tour CDs (when available). NRIS will also supply: ArcView™ software installation; ArcView™ software training; ongoing GIS and ArcView™ technical assistance; Montana state-wide and local digital GIS data sets.

Libraries who wish to participate in the project must provide: appropriate computer hardware and software (e.g., 486 PC, MS Windows 3.0, DOS 3.1) to run ArcView™ and store the databases; one person designated as the library's ArcView™ coordinator and project contact; a written statement requesting participation in the Montana ArcView™ in Libraries Project, name of on-site contact, detailed list of hardware/software available for the project, and any other commitments for usage or support the library will make.

For information, contact Allan Cox, Director, NRIS, MT State Library, 1515 E. Sixth Ave., Helena, MT 59620-1800: 406 444-5355.

GIS CONFERENCES

March 21-25, **The Fifth International Conference on GIS** in Ottawa, Ontario, Canada. Contact: L. Aubrey, Canadian Conference on GIS, c/o SMRSS EMR Canada, 615 Booth St., Ottawa, On Canada, K1A OE9 at 613-995-0266.

March 22-25, **AM/FM Conference XVI** will be held in Orlando FL. Contact: Paula Delie, AM/FM International, 14456 E. Evans Avenue, Aurora, CO 80014-1409, 303-337-0513; fax 303-337-1001.

March 24-27, **Sixth Annual Geographic Information Systems Conference (TSU/GIS '93).** Contact: Dr. John M. Morgan, III, Dept. of Geography & Environmental Planning, Towson State University, Baltimore, MD 21204-7097, 410-830-2964.

March 28-31, **GIS Transportation Symposium '93**, Albuquerque, NM. Contact: Jim Dolson, GIS-T '93 Symposium Chair, Florida DOT, 605 Suwannee St., MS43, Tallahassee, FL 32399, 904-488-1954.

April 6-9, 1993, **AAG Annual Meeting**, Atlanta, GA. Contact: Kevin Klug 202-234-1450.

April 19-20, **On Common Ground Conference**, Denver, CO. Contact: On Common Ground Conference, P.O. Box 10460, Eugene, OR 97440-2460, 503-343-1200; fax 503-343-7024.

April 26-28, **ELRC and WSLCA** joint spring meeting, Washington, DC. Contact: ELRC c/o Michigan Department of Natural Resources, Real Estate Division, P.O. Box 30028, Lansing, MI 48909.

April 26-29, **14th Annual NCGA Conference**, "Computer Graphics Solutions: Applications for Implementation", *National Computer Graphics Assoc.*, Philadelphia, PA. Contact: Ms. Kate Whalen, NCGA, 2722 Merrilee Dr., Suite 200, Fairfax, VA 22031, 703-698-9600; fax 703-560-2752.

May 3-9, **16th International Cartographic Conference, ICC '93,** *International Cartographic Assoc.*, Cologne, Germany. ' Contact: AKM, Congress Service Clarastrasse 57, CH-4405, Basel, Switzerland; or Robert Marx, Chair, USNC Papers Comm., 8312 Oakford Dr., Springfield, VA 22152.

May 10-12, **First National GeoData Policy Forum**, Washington, DC. Contact: Brenda Abrams at 301-929-3351.

May 17-20, **14th North American Surveying and Mapping Teaching Conference**, "A Changing Professional World", University of Florida, Gainesville, FL. Contact: 904-392-9492; fax 904-392-3394.

May 24-28, **ESRI Annual User Conference**, Palm Springs, CA, Contact: ESRI, 714-793-2853.

June, **Wisconsin Land Information Association (WLIA) Quarterly Membership Meeting**, Fox River Valley area, WI. Contact: WLIA at 800-344-0421.

June 21-22, **Third Annual International GPS/GIS Conference**, Seattle, WA. Contact: GeoResearch, Inc., 115 N. Broadway, Billings, MT 59101, 406-248-6771; fax 406-248-6770.

July 25-29, 1993, **URISA '93 Annual Conference**, Atlanta, GA. Contact: Urban and Regional Information Systems Association, 900 Second Street N.E., Suite 304, Washington, DC 20002, 202-289-1685.

August 24-26, **Twelfth Pecora Remote Sensing Symposium**, Sioux Falls, SD. Contact: Dr. Robert Hass, Symposium Chair at 605-594-6007.

September 26-30, **Second International Conference/Workshop on Integrating GIS and Environmental Modeling**, Breckenridge, CO. Contact: NCGIA Conference Secretariat at 805-893-8224.

September 25-30, **Third Annual National States Geographic Information Council Meeting**, Williamsburg, VA. Contact: Ted Talmon, Conference chair, 505-827-2047.

October 4-7, **NW Arc/Info Users Conference**, Kalispell MT., Contact: Fred Gifford, MT State Library 1515 E Sixth Ave., Helena, MT.59620-1800, 406-444-5357.

October 20-22, **Southwest Arc/Info User Conference**, Jackson Hole, WY, Contact: Nancy McCann, 307-777-5958.

October 29-November 6, 1993, **GIS/LIS '93 Annual Conference & Expo. & ACSM/ASPRS Fall Convention**, Minneapolis, MN. Contact: ACSM, 5410 Grosvenor Lane, Bethesda, MD 20814-2122, 301-493-0200; fax 301-493-8245.

1994

Spring 1994, **GIS Users Conference**, Kalispell, MT, Contact: Fred Gifford, MT State Library, 1515 E. Sixth Ave., Helena, MT., 59620-1800; 406-444-5357.

August 8-12, **URISA '94**, *Urban & Regional Information Systems Association.*, Milwaukee, WI. Contact: The Urban & Regional Information Systems Assn., 900 Second St., NE, Suite 304, Washington, DC 20002, 202-289-1685.

1993 GIS TRAINING

April 5-8, **Introduction to Global Positioning Systems (GPS)**, University of Wisconsin-Madison Engineering Building, Room 1610, 1415 Johnson Drive, Madison, WI. Contact: Engineering Registration, The Wisconsin Center, 702 Langdon St., Madison, WI 53706, 608-262-0876; fax 608-263-3160.

April 16, **Operating a Profitable Survey Business** Madison, WI. Contact: Professional Surveyor Seminars, 3020 Holcomb Bridge Road, Norcross, GA 30071, 404-448-1601; fax 404-448-2286.

April 19-24, **Introduction to GIS**, Utah Automated Geographic Reference Center, Salt Lake City, UT, 801-538-3611, fax: 801-538-3622.

April 26-27, **AML**, Utah Automated Geographic Reference Center, Salt Lake City, UT, 801-538-3611, fax: 801-538-3622.

April 28-29, **Map Display and Query**, Utah Automated Geographic Reference Center, Salt Lake City, UT, 801-538-3611, fax: 801-538-3622.

April 30, **Database**, Utah Automated Geographic Reference Center, Salt Lake City, UT, 801-538-3611, fax: 801-538-3622.

May 10-13, **An Introduction to Space System Principles and Applications**, The George Washington University, Washington, DC, 800-424-9773; fax 202-872-0645.

May 17-21, **Synthetic Aperture Radar with Remote-Sensing Applications**, The George Washington University, Washington, DC, 800-424-9773; fax 202-872-0645.

May 18-20, **Introduction to PC ARC/INFO**, Montana State University, Bozeman, MT, 406-994-6907.

May 24-26, **Satellite Microwave Remote Sensing and Applications**, The George Washington University, Washington, DC, 800-424-9773; fax 202-872-0645.

August 10-12, **Introduction to PC ARC/INFO**, Montana State University, Bozeman, MT, 406-994-6907.

November 1-4, **An Introduction to Space System Principles and Applications**, The George Washington University, Washington, DC, 800-424-9773; fax 202-872-0645.

November 8-10, **Satellite Microwave Remote Sensing and Applications**, The George Washington University, Washington, DC, 800-424-9773; fax 202-872-0645.

November 15-19, **Synthetic Aperture Radar with Remote-Sensing Applications**, The George Washington University, Washington, DC, 800-424-9773; fax 202-872-0645.

December 2-4, **Introduction to PC ARC/INFO**, Montana State University, Bozeman, MT, 406-994-6907.

GIS SEMINARS

The Natural Resource Information System is sponsoring the third annual series of GIS Seminars. The seminars are held once a month throughout the fall, winter, and spring and range in topic from software specific technical tips and tricks, to general information about cartography or specific GIS projects in the state.

The seminars are free, and anyone is welcome to attend. They are informal, are typically an hour long, and are followed by a question and answer session. They are scheduled for Friday afternoons at 3:00 pm in the Montana State Library Conference Room.

Two more presentations are scheduled through this Spring:
* April 16 - Dan Hawkins, Information Resources Division, "Putting Together a Statewide Digital Elevation Model"
* May 21 - Dave Briar, U.S. Geological Survey, "Using a GIS with Groundwater Models"

If you would like more details about the Seminars, or would like to be added to the mailing list, contact Kris Larson, at the Natural Resource Information System, Montana State Library, 1515 East Sixth Avenue, Helena, Montana, 59620-1800, 444-5691.

MSU OFFERS INTRO TO PC ARC/INFO

PC ARC/INFO (3-day course) is being offered through the Montana State University Geographic Information and Analysis Center. Class topics include: Major capabilities of PC ARC/INFO; sample applications; GIS concepts; getting started with PC ARC/INFO; getting graphic data into PC ARC/INFO; making the data useable; getting attribute data into PC ARC/INFO; displaying the data; query and analysis; where to get additional training and help. Contact: 406-994-6907. See the GIS Training section for upcoming class dates.

AROUND THE STATE

Kristina Sacks, formerly on contract to the Department of Fish, Wildlife and Parks, is now employed by **Vestra Resources** in Helena.

Peter Langen has moved from the Department of Natural Resources and Conservation to the NRIS GIS program at the Montana State Library. Peter formerly worked at the Montana State Library in the NRIS, Water Information System.

Brian Mladenick has assumed the position of GIS Coordinator for the Confederated Salish and Kootenai Tribes and will replace CloAnn Villegas as representative to the Montana Interagency GIS Technical Working Group.

Don Cromer, formerly from the Dept. of Transportation and his wife **Regina** have started the GPS consulting firm, Terra West Technology, 406-933-5641.

Gordon Larson has been appointed the Montana Interagency GIS Technical Working Group representative from the Department of Transportation.

Montana GIS News is published by the Montana GIS Users Group, a statewide consortium of Montana governmental agencies and businesses. It is published at NRIS in the Montana State Library. Send articles and information for publication to NRIS, Montana State Library, 1515 East 6th Avenue, Helena, MT 59620-1800; 406-444-5354.

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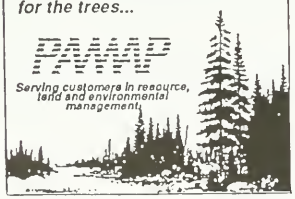

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REFLECTIONS ON THE 1992 CONFERENCE

by Stu Kirkpatrick

My final task as 1992 Montana GIS conference chairman remains to provide you, the GIS user, with a summary report of the 1992 convention held in Butte. The conference and speaker evaluations have been tallied, the bills all paid, and fees nearly collected, so this should be a snap to write. Typically however, I have left this chore until the last minute. Now, with the Newsletter Editor breathing down my neck waiting for fax or modem transmission, I will attempt to impart to you a sense of the conference highs and lows and a few personal observations.

Overall, the conference appears to have been a success, with no one saying it failed to meet their expectations, and an overall rating of 8.68 on a scale of ten. Workshops, commercial exhibits and the opportunity to communicate (not network) with other GIS professionals topped the list of conference highs. Bummer status was conferred on sales pitches by speakers, noise during presentations, vendors giving presentations, and unprepared speakers. On the whole, speakers fared fairly well, receiving an average rating of 7.2 for meeting audience expectations. The convention facility and staff rated 8.27 for accommodations and service.

The evaluation form question sparking the most diverse responses was that which asked if the conference was at a good time of year. There were 27 yes, 14 somewhat, and 9 no responses. Many of the comments asked that we choose a time of year with more predictable weather. Although we don't know if these requests came from those familiar with Montana weather patterns, concerns about the hazards of traveling in Montana in December are legitimate. For this reason, as well as the fact that no group has volunteered to host the next convention, the board of directors has set a tentative date of spring, 1994, for the next convention.

Now for the personal observations I promised. I respect and agree with the many comments deriding sales pitches by vendors under the auspices of a paper or workshop. Each convention committee has struggled with this problem, and it will continue to be an area of priority for the next convention to address. Your voice has been heard. However, I do not believe that the request for no vendors as presenters falls into the same category. In fact, it seems almost incongruous to me, that on some evaluation forms the conference high point was the commercial exhibits while the lowpoint was vendors as presenters. I have two responses to this point of concern.

The first deals with the primary motivation for vendors to exhibit at conventions such as ours. They come to sell their services and products, and therefore must maintain a relatively high profile or their efforts are a wasted advertising expense. They want you to remember their company when you send out your next R.F.P., or pick up the phone to request information. A chance to present a paper or workshop insures they can optimize the effort they put in traveling to the conference. Without this opportunity, it would become even more difficult for the conference committee to put together a diverse and interesting representation of commercial exhibitors.

Secondly, giving vendors the opportunity to make a presentation, gives us the opportunity to share a wide range of GIS experiences and projects that would not be possible otherwise. While you and I may be confined to a relatively narrow range of GIS applications in our own work, a GIS vendor may be immersed in several distinctly different projects over the course of a year. The range of their experience provides us an opportunity to take a new look at our own areas of GIS involvement. Additionally, the vast majority of vendor presentations that I heard at the last convention made no mention of their company or product. It is too bad we don't have a hook for those who abuse commercialism in the name of knowledge, but I believe most commercial presenters strive to inform rather than indoctrinate.

In conclusion, I would like to thank all those who helped make the 1992 convention a success. I think I have been given too much credit for what was in truth a very large group effort. Of course, I presume I have received too much blame from those of you who felt the convention was less than it should of been, so feel free to spread that around as well. I also urge all of you that are able, to participate in the organization of the next convention to make it even better.

HAVE SOMETHING TO SAY?

Persons interested in editing, contributing articles, hosting a column, or doing other activities related to producing the Montana GIS News should contact Fred Gifford at (406) 444-5457.

Are You on our mailing list?

If you would like your name added or taken off the Montana GIS Users Group mailing list, would like to update your address, or would like to prevent its distribution, please fill out, detach, and mail the following form to Pam Smith, NRIS - Montana State Library, 1515 E. Sixth Ave., Helena, MT. 59620 or call 444-5354.

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